

REMARKS

Claims 1-86 are pending in this application. As a result of an election requirement, claims 38-86 previously were withdrawn, thereby leaving claims 1-37 for prosecution in this application.

Claims 1-25 are rejected and claims 4-37 are objected to.

The Examiner has indicated the allowability of claims 26 and 27, if these claims are rewritten as being independent, including all of the limitations of the base claim and any intervening claims.

Objections to the Drawings

Figures 1-3 have been objected to for lacking the legend --PRIOR ART--. This objection is now made moot in view of the annotated and replacement drawings attached to this Response, which have been appropriately labelled.

The Examiner objected to the drawings under 37 CFR 1.83(a) as not showing "every feature of the invention specified in the claims." Applicant respectfully requests consideration. The Examiner considers that a "patterned optical element encoding positions on the second beam" is not shown in the drawings. However, examples of a "patterned optical element" as claimed are in Figure 13. Figure 13 shows a pattern on window 1380, which is explained in the application in paragraph [0059] as follows: "the pattern is encoded in the rays 1350, which are partially reflected back into the optical conduit 1340". Figure 13 shows other examples of patterned optical elements, such as bar pattern 1381 and gradual shading patterns 1393. Accordingly, it is submitted that the drawings satisfy 37 CFR 1.83(a), and reconsideration of the objection to the drawings is respectfully requested.

Claim Rejections under 35 USC 102

Claims 1-3 are rejected under 35 USC 102(b) as being anticipated by Sato et al. (U.S. Patent No. 6,046,448). Applicant respectfully requests reconsideration.

Claim 1 includes at least one limitation not found in Sato et al., as follows:

"bending at least the optical conduit, at least partly in response at least to

measuring the set of one or more positions of the optical conduit”

The Examiner refers to the piezoelectric element (18) and optical fiber probe (1) of Sato et al., shown for example in Fig. 1 of Sato et al., as suggesting this limitation. Applicant submits that the Examiner is not properly interpreting the phrase “in response ... to measuring ... positions of the optical conduit”. Sato et al. does not discuss the piezoelectric element (18) as performing any action in response to position measurements. As shown by Fig. 1 of Sato et al., the piezoelectric element (18) is not part of any measurement loop that permits position measurements to be communicated to the piezoelectric element (18), so piezoelectric element (18) cannot bend the optical fiber probe “in response ... to measuring ... positions of the optical conduit” as claimed. Thus, the piezoelectric element (18) does not satisfy the limitation above.

In contrast with the piezoelectric element (18), the piezo actuator (15) shown in Fig. 1 is part of a loop. However, even if the Examiner were to consider the piezo actuator (15) and optical conduit (1), also shown in Fig. 1 of Sato et al., the limitation above is not satisfied. As column 6, lines 26-28 and 42-50 of Sato et al. note:

“A sample 2 is placed on a piezo actuator 15 which can move along x-, y- and z-axis directions, and a controller 16 controls the movement of piezo actuator 15.... [B]y adjusting the movement of piezo actuator 15 along z-axis direction in such a way as to allow the optical fiber probe 1 to make a vibration with a constant amplitude, it is possible to maintain constant the distance between the surface of sample 2 and the tip of optical fiber probe.”

Thus, the piezo actuator (15) in Sato et al. does not perform “bending ... the optical conduit ... in response ... to measuring ... positions of the optical conduit”. Rather, the piezo actuator (15) of Sato et al. moves the microscope sample which is under observation for the purpose of maintaining a constant distance between the microscope sample and the optical fiber probe.

Accordingly, it is submitted that Sato et al. does not anticipate claim 1. Claims 2 and 3 depend from claim 1, and distinguish for at least the same reasons.

Accordingly, reconsideration of the rejection of claims 1-3 is respectfully requested.

Claim Rejections under 35 USC 103

Claims 4-25 and 28-37 are rejected under 35 USC 103(a) as being unpatentable over Sato et al. (U.S. Patent No. 6,046,448). Applicant respectfully requests reconsideration.

Claim 4 includes at least one limitation not found in Sato et al., as follows:

“a motivator at least partly inducing motion in at least the actuator, the optical conduit connected to the actuator...

a servo driving at least the motivator at least partly in response to at least the encoded positions on the second beam”

Claim 28 includes at least one limitation not found in Sato et al., as follows:

“one or more motivators at least partly inducing motion in at least the one or more actuators, the one or more optical conduits connected to the one or more actuators...

one or more servos driving at least the one or more motivators at least partly in response to at least the encoded positions on the second set of beams.”

Applicant points out that Sato et al. does not teach or suggest a motivator or servo as recited in the claims. Sato et al. fails to teach or suggest a “servo” driving a “motivator” in response to “encoded positions” on a beam, where the “motivator” induces motion in an “actuator” connected to an “optical conduit”. Neither the piezo actuator (15) nor the piezoelectric element (18) satisfies these limitations. The piezoelectric element (18) of Sato et al. is not part of any measurement loop that could permit encoded positions to be communicated to the piezoelectric element (18) and allow the piezoelectric element (18) to respond to encoded positions. Also, the piezo actuator (15) moves the microscope sample, rather than the optical fiber probe. Thus, Sato et al. does not teach a motivator or servo as recited in the claims.

Furthermore, combining Sato et al. with a “motivator” and a “servo” as claimed, where the “motivator” induces motion in an “actuator” connected to an “optical conduit”, and the “servo” drives the “motivator” in response to “encoded positions” on a beam, would ruin the operation of the microscope in Sato et al. Using a “motivator” driven by a “servo” to induce motion in the optical fiber probe in response to the position of the optical fiber probe would: 1) ruin the constant distance that must be maintained

between the optical fiber probe and the sample under observation by the microscope, and 2) alter the vibration state of the fiber which depends on the distance between the optical fiber probe and the microscope sample, as discussed in Sato et al. at column 6, lines 45-56:

"Therefore, by adjusting the movement of piezo actuator 15 along z-axis direction in such a way as to allow the optical fiber probe 1 to make a vibration with a constant amplitude, it is possible to maintain constant the distance between the surface of sample 2 and the tip of optical fiber probe. Thus, while maintaining constant the distance between the sample 2 and the tip of optical fiber probe 1, it is possible, by scanning the beam over the sample by moving the piezo actuator 15 in x- and y-axis directions, and by monitoring how much the piezo actuator 15 moves along z-axis direction, to obtain the image of surface texture of sample 2."

Thus, not only does Sato et al. fail to teach or suggest a "motivator" or "servo" as recited in the claims, modifying the microscope in Sato et al. to include a "motivator" and "servo" as recited in the claims would induce motion in the optical fiber probe in response to the position of the optical fiber probe, and ruin the operation of the microscope, because the constant distance between the optical fiber probe and the sample would be changed, and the vibration state of the fiber which depends on this constant distance would be altered. These consequences would prevent the microscope of Sato et al. from obtaining images.

Accordingly, the Examiner has not set forth a *prima facie* case supporting rejection under 35 USC 103(a).

Accordingly, reconsideration of the rejection of claims 4-25 and 28-37 under 35 USC 103(a) is respectfully requested.

CONCLUSION

Applicant respectfully submits that the pending claims are now in condition for allowance and thereby solicits acceptance of the claims, in light of these amendments and remarks.

Respectfully submitted,



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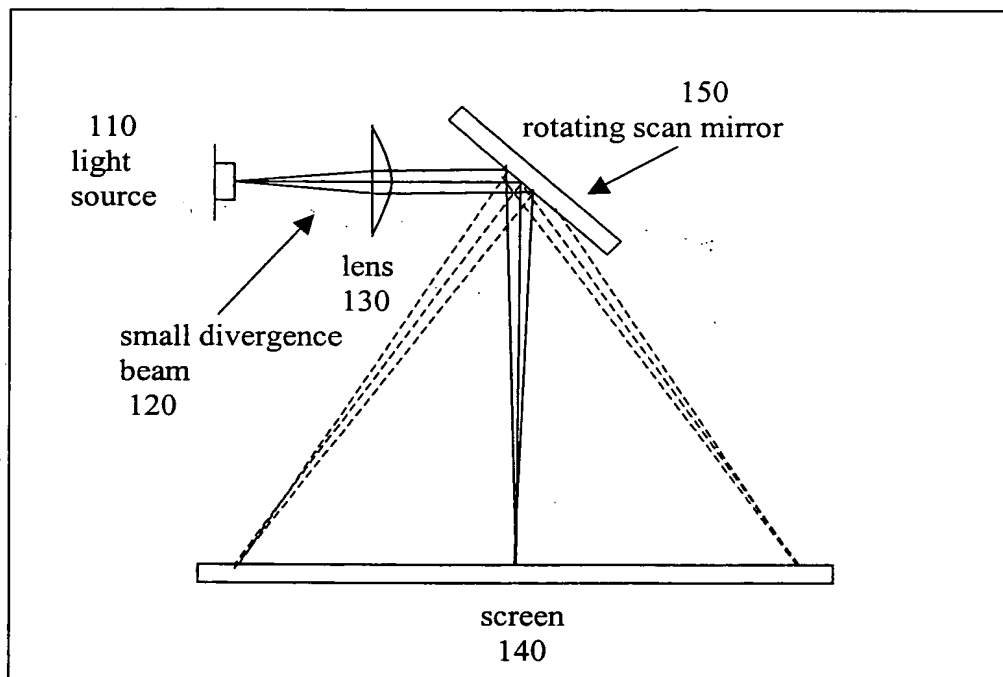


FIGURE 1

Prior Art

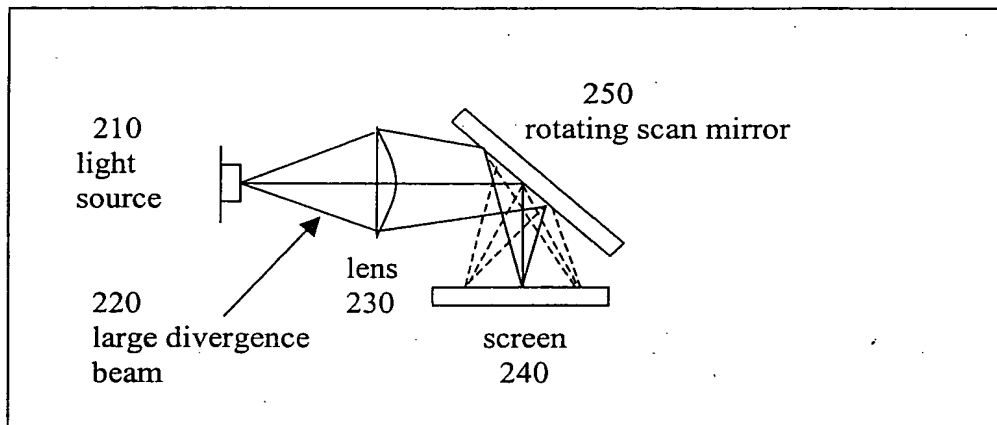


FIGURE 2

Prior Art

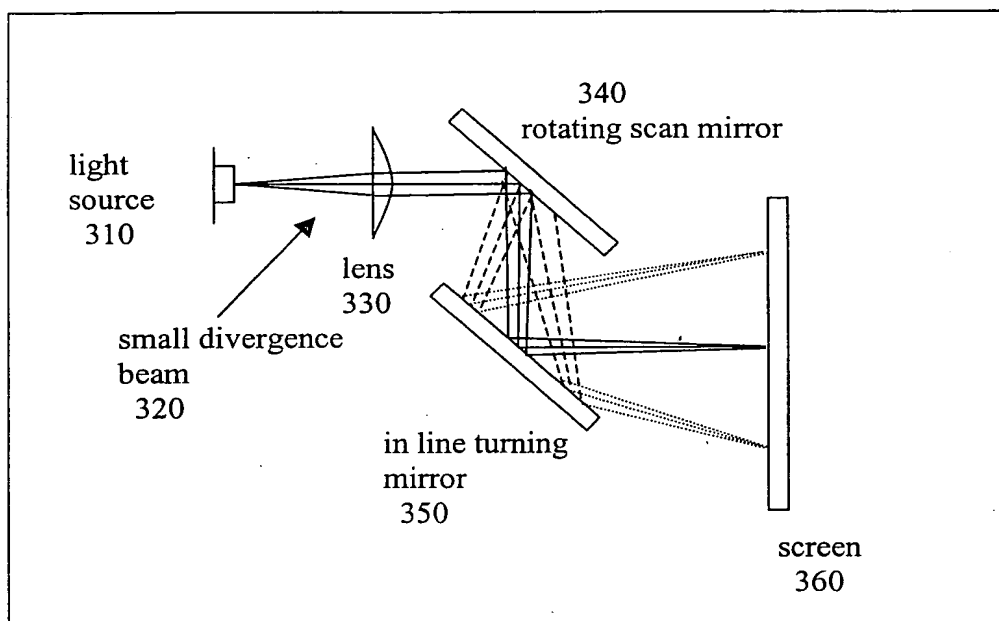


FIGURE 3

Prior Art